REMARKS/ARGUMENTS

Reconsideration is respectfully requested of the Office Action of August 10, 2005, relating to the above-identified application.

Applicants note with appreciation that the Official Action indicates that Claims 2, 7, 8 and 10 would be allowable if rewritten in independent form. The claims have been edited to be more consistent with U.S. patent practice. These changes are not made for reasons related to patentability.

The rejection of Claims 1, 3-6, 9 and 11-13 under 35 U.S.C. § 103 is traversed and reconsideration is respectfully requested. The Official Action relies on the British patent of *Davies* (GB 1,090,294), taken with *Clough* (US 5,279,803). Applicants respectfully submit that the references fail to establish *prima facie* obviousness of the claimed invention.

The invention as set forth in Claim 1 of the original application is directed to a process for the regeneration of a supported or unsupported suspension catalyst containing at least one platinum group metal. The process is carried out by dissolution of the platinum group metals present in the catalyst in an aqueous hydrochloric acid. An oxidizing agent is used for the platinum group metals and this is followed by filtration of insoluble constituents and precipitation of the platinum group metals by means of a reducing agent at a pH in the range of 2-10. It is a characteristic of the invention that the precipitation step is carried out in the presence of a chelating agent for one or more metals selected from the group consisting of group 2a, 3a, and 4a of the Periodic System and Transition Elements.

The Official Action alleges that *Davies* discloses a process for the recovery of at least one platinum group metal, such as palladium, platinum or gold from catalysts which are supported in

finely divided form on a carrier. The *Davies* process as described in the Official Action is carried out by treating the catalyst in an aqueous medium of HCl and hydrogen peroxide, in the presence of an oxidizing agent. *Davies* also discloses carrying out a filtration step and a precipitation step of the platinum group metals. The reducing agent used is formed of formaldehyde. The Official Action admits that *Davies* does not disclose utilizing the reducing agent at a pH in the range of 2 to 10 in the presence of a chelating agent.

The Official Action relies on *Clough* for disclosure of a process for recovering precious metals such as platinum group metals. *Clough* teaches to carry out the recovery with a metal using a chelating agent along with a transition metal wherein the pH can be maintained in the range of 0 to 1. The chelating agent, according to the Official Action, can be citric acid, tartaric acid, as well as nitrilotriacetic acids.

The Official Action concludes that it would have been obvious to utilize a chelating agent during the precipitation step of *Davies* allegedly because *Clough* teaches a process for recovering precious metals such as the platinum group metals where the recovery of the metal is carried out using a chelating agent along with a transition metal and where the pH may be maintained within the range of 1 to 10.

The Official Action further contends that the modification would have been obvious because one of ordinary skill in the art would have expected a process for recovering platinum group metals as taught by *Clough* to have been similarly useful and applicable to a process for recovering platinum group metals as shown by *Davies*.

However, applicants respectfully submit that the disclosure of *Clough* has not been properly construed.

It is of particular importance to note that the *Clough* process is related to a distinctly different technology from that presented in the present application. Applicants' process relates to the regeneration of a suspension catalyst containing a platinum group metal. The *Clough* invention relates to a process for recovering precious metals from an ore containing carbonaceous materials. See the Abstract on page 1 of the patent. As pointed out in col. 1, beginning at line 28, carbonaceous ores contain elemental carbon such as graphite or organic compounds and it is the presence of the carbon and organic compounds that makes it difficult and expensive to recover valuable metals such as the precious metals.

In order to present a process which is said to be an advance over prior methods for recovering of precious metals from carbonaceous ores, *Clough* suggests contacting the ore with at least one added metal component in an amount defective to promote oxidation of the carbonaceous material. See col. 1, lines 55-66. The conditions necessary to carry out the *Clough* process include chemically oxidizing at least a portion of the carbonaceous materials and then at least partially liberating the metal to be recovered from the ore. The second step involves actual recovering of the precious metals.

Note that when *Clough* uses the term "at least partially liberate the metal to be recovered from the ore", he means to place the precious material in the ore in a condition which is more susceptible to recovery, for example, by cyanidation, than without the pretreatment. Thus, *Clough* does not "liberate" the precious metal by dissolving the precious metal, but instead makes the precious metal more accessible to a subsequent dissolving step. For example, *Clough* discloses that in one embodiment, the contacting of the carbonaceous ore can be with a gaseous source of oxygen such as air or oxygen. See col. 1, beginning at line 67.

Clough discloses that an improved rate of oxidation including solubilization or conversion to a different form, for example, solids, accomplishes an improved rate of oxidation of the carbonaceous material and the yield/recovery of the desired metal as the function of time is substantial. See col. 2, lines 30-37.

The reference further teaches that the process as described therein is intended as an improvement over the previous chlorination/oxidation procedures which require a substantial amount of chemicals and other expensive technology.

Thus, *Clough*'s teaching as to the advantages of his process compared to the chlorination/oxidation procedures might possibly motivate a skilled person to use the system of *Clough* combined with the precious metal recovery by cyanide, ammonium thiosulfate, thiourea or brine leaching as disclosed in col. 10, lines 37-61, in place of the chlorination/oxidation procedure of *Davies*. *Davies* uses a combination of hydrochloric acid and hydrogen peroxide for an in situ generation of chlorine.

Clearly, however, the combination of *Clough* with *Davies* would not motivate a person skilled in the art to (1) select one particular step, namely, the treatment with the chelating agent, from the *Clough* process and (2) add this feature to the *Davies* procedure. Thus, two distinct steps would be necessary to modify the *Clough* process. There is nothing in either reference that leads a person skilled in the art to believe that selecting step (1) and adding step (2) would bring about a successful result.

Clough discloses as an example of the specific conditions of the invention, the use of iron, copper or cobalt with a chelating agent as shown in col. 4, lines 30-68. In these complexes, all the ligand is bound to the metal, as becomes apparent from the metal to ligand mole ratios of

from 1 to 3 disclosed in col. 5, lines 25-32. There is no suggestion in the *Clough* reference to use a ligand that is not complexed to a metal.

A person skilled in the art understands that a chelating agent is a compound that is capable of binding to a metal forming a polydentate metal complex. See attached definition of "chelating agent" from Google and Encyclopedia.com A person skilled in the art would not consider the metal complexes of *Clough* to be chelating agents because they already contain a metal and, therefore, are not capable of binding further amounts of metal. Furthermore, if a skilled person would combine the *Clough* reference with the *Davies* reference as suggested in the Official Action using one of the metal complexes as disclosed by *Clough* as an additive in the *Davies* process, it would still not arrive at the claimed subject matter since the metal complexes of *Clough* are not chelating agents as defined in the application that are capable of complexing any further metal. Note that applicants' claims herein specify that the precipitation is carried out in the presence of the chelating agent for <u>one or more metals</u> from the indicated members of the Periodic System. The metal complexes of *Clough* do not meet that qualification.

The secondary reference of *Clough* teaches that the metal contained in the metal complex is an essential element of the process. Consequently, a person skilled in the art would not consider using a metal free ligand in place of the metal complex based on the teachings of *Clough*. As a consequence, applicants' claimed process has not been rendered *prima facie* obviousness by the combination of references.

The listing of the second *Clough* patent, namely US 5,279,802, adds nothing to the record in the case since this reference is essentially the same as US 5,279,803. The process disclosed in

US 5,280,004 is not related in any way to precipitating a precious metal by means of a reducing agent. Consequently, these references are not deemed pertinent to the claimed subject matter.

In view of the foregoing, applicants respectfully submit the rejection of the claims is improper as it does not establish that the subject matter claimed herein is *prima facie* obvious in view of the combination of references relied on by the Examiner.

Favorable action at the Examiner's earliest convenience is respectfully requested.

Respectfully submitted,

SMITH, GAMBRELL & RUSSELL, LLP

By: ______________________
Robert G. Weilacher, Reg. No. 20,531

Suite 3100, Promenade II
1230 Peachtree Street, N.E.
Atlanta, Georgia 30309-3592
Telephone: (404): 815-3593
Facsimile: (404): 685-6893

Google

Web Images Groups News Froogle Local New! more »

chelating agent Search Advanced Search Preferences

Web Results **1** - **10** of about **356,000** for **chelating agent**. (**0.07** seconds)

Chemical of the Week -- Chelates and **Chelating Agents**
A **chelating agent** is a substance whose molecules can form several bonds to a single metal ion ... An example of a simple **chelating agent** is ethylenediamine. ...
scifun.chem.wisc.edu/chemweek/Chelates/Chelates.html - 10k -
Cached - Similar pages

chelating agents on Encyclopedia.com
chelating agentskē´lātĭng. Certain organic compounds are capable of forming coordinate bonds (see chemical bond) with metals through two or more atoms of ...
www.encyclopedia.com/html/c1/chelatin.asp - 36k - Cached - Similar pages

DTPA, EDTA, NTA ACID (**CHELATING AGENTS**)
Organic ligand is called chelator or **chelating agent**, the **chelate** is a metal ... **Chelating agents** offers a wide range of sequestrants to control metal ions ...
www.chemicalland21.com/arokorhi/ specialtychem/perchem/CHELATING%20AGENTS.htm - 32k - Cached - Similar pages

Oilfield Glossary: Term '**chelating agent**'
Chelating agents stabilize or prevent the precipitation of damaging compounds. In the oil field, **chelating agents** are used in stimulation treatments and for ...
www.glossary.oilfield.slb.com/ Display.cfm?Term=**chelating**%20**agent** - 18k -
Cached - Similar pages

Versene **Chelating Agents**
VERSENE **chelating agents** can effectively control metal ions in a wide variety of applications. They are suitable for both wet and dry applications and can ...
www.dow.com/versene/prod/prodlist.htm - 29k - Cached - Similar pages

Oral **Chelation** - Oral **Chelation** with 16 natural **chelation agents ...**
Oral **Chelation** and Antioxidant combo formula with 16 natural **chelation agents** and 16 antioxidants for **chelation** detoxification from heavy metals, ...
www.extremehealthusa.com/ - Similar pages

> Oral **Chelation** - Oral **Chelation** with 16 natural oral **chelation ...**
> The **chelating agent** actually encircles a mineral or metal ion and carries it from the ... **Chelation** therapy involves injecting **chelating agents** into the ...
> www.extremehealthusa.com/intro.html - 20k - Cached - Similar pages

Atherosclerosis, **Chelation**, and **Chelating Agents**
Any oral **chelating agent** would contain a synthetic amino acid called EDTA along with ... Oral **Chelating agents** like PCA-Rx (sold at **Chelation**) are highly ...
www.ezinearticles.com/ ?Atherosclerosis,-Chelation,-and-Chelating-Agents&id=68825 - 23k - Cached - Similar pages

Alternative Medicine Review: Combined administration of a ...
Full text of the article, 'Combined administration of a **chelating agent** and an antioxidant in the prevention and treatment of acute lead intoxication in ...
www.findarticles.com/p/ articles/mi_m0FDN/is_3_6/ai_76487145 - 23k -
Cached - Similar pages

[**Chelation**: Information From Answers.com]
chelating agents (kē ' lātĭng) . Certain organic compounds are capable of forming coordinate bonds (see chemical bond) with metals through two or.
www.answers.com/topic/chelation - 33k - Cached - Similar pages

Goooooooooogle ►
Result Page: 1 2 3 4 5 6 7 8 9 10 **Next**

chelating agent | Search

Search within results | Language Tools | Search Tips | Dissatisfied? Help us improve

Google Home - Advertising Programs - Business Solutions - About Google

chelating agents

Related: **Organic Chemistry**

(kē´lātĭng) . Certain organic compounds are capable of forming coordinate bonds (see **chemical bond**) with metals through two or more atoms of the organic compound; such organic compounds are called chelating agents. The compound formed by a chelating agent and a metal is called a chelate. A chelating agent that has two coordinating atoms is called bidentate; one that has three, tridentate; and so on. EDTA, or ethylenediaminetetraacetate, $(^-O_2CH_2)_2NCH_2CH_2N(CH_2CO_2^-)_2$, is a common hexadentate chelating agent. Chlorophyll is a chelate that consists of a magnesium ion joined with a complex chelating agent; heme, part of the hemoglobin in blood, is an iron chelate. Chelating agents are important in textile dyeing, water softening, and enzyme deactivation and as bacteriocides.